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**(54) METHOD FOR DETECTING AND QUANTITATIVELY DETERMINING SAMPLE NUCLEIC ACID FRAGMENT BY SCANNING ELECTROCHEMICAL MICROSCOPE**

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a method which sensitively detects and quantitatively determines sample nucleic acid fragments which are respectively complementary to a DNA fragment and a PNA fragment fixed on a surface of an analysis element by using a DNA analysis element and a PNA analysis element.

SOLUTION: By bringing a solution which contains sample nucleic acid fragments into contact with a DNA analysis element or a PNA analysis element in which DNA fragments or PNA fragments are respectively fixed in plural regions sectioned on a surface of a substrate, under the presence of a hybrid DNA-binding electrochemical active molecule or a hybrid PNA-binding electrochemical active molecule, the sample nucleic acid fragments which are complementary to the DNA fragments or the PNA fragments fixed in the analysis elements, and also the electrochemical active molecules are combined. This is a method for detecting and determining quantitatively the complementary sample nucleic acid fragments in which an electric current generated in the electrochemical active molecule-binding region on the surface of the analysis elements is measured by the application of an electric potential to the surface of the analysis elements by a scanning electrochemical microscope.

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